

SUPPORT FOR THE AMENDMENTS

Claim 1 is amended to include description from original Claims 10 and 11. Further support for the amendment of Claim 1 is found on page 29, lines 14-17, in the specification.

No new matter is added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1-9 and 12-25 are active.

REMARKS/ARGUMENTS

The claimed invention is directed to a process for preparing middle distillates and high boiling residues suitable for the production of lubricating bases from a linear paraffinic hydrocarbon feedstock obtained by a Fischer-Tropsch type synthesis. Middle distillates are fractions useful as fuels and fuel additives. Fischer-Tropsch synthesis yields linear hydrocarbon paraffin mixtures which for various reasons are not suitable for use in fuels and/or lubricants. Consequently these mixtures are subjected to processes for hydrocracking and hydroisomerization in order to obtain products having the properties required for such use. Conventional processes of conversion suffer in that none simultaneously produce a middle distillate portion and high boiling residue, both of which are suitable for their respective use.

For example, a conventional process able to produce a good yield of middle distillate suitable as a fuel, does not provide a high boiling residue sufficiently isomerized to be useful in a lubricating base. In such case, the high boiling residue contains a high quantity of linear paraffin and must be further isomerized in a “heavy dewaxing” treatment, to be rendered suitable for use in a lubricant. Conversely, if the process conditions are so set to significantly promote hydroisomerization, the yield of fractions of boiling point less than 150°C is

increased and the yield of middle distillates is diminished to an extent that the process is not suitable.

Applicants have addressed this problem by providing a process according to Claim 1 and claims dependent thereon which obtains good yields of both middle distillate and a high boiling residue suitable for producing lubricating bases in at least one hydrocracking step.

No such process is disclosed or suggested by the cited references.

The rejection of Claims 1-22 and 25 under 35 U.S.C. 103(a) over Clark (US 7,285,693) in view of Chao et al. (US 5,230,789) is respectfully traversed.

The cited combination of references do not disclose or suggest a process wherein both middle distillate and high boiling residue suitable for intended use are obtained via the same hydrocracking step.

Clark describes a process to prepare a catalytically dewaxed gas oil or gas oil blending component by performing the following steps:

- (a) hydrocracking/hydroisomerizing a Fischer-Tropsch product;
- (b) separating the product of step (a) into at least one or more fuel fractions and a gas oil precursor fraction;
- (c) catalytically dewaxing the gas oil precursor fraction obtained in step (b); and
- (d) isolating the catalytically dewaxed gas oil or gas oil blending component from the product of step (c) by means of distillation. (Abstract)

The Office has cited Col. 3, lines 52-58, and Col. 6, lines 49-52, to show disclosure of a process for the contemporaneous preparation of middle distillates and lubricating bases. However, Applicants respectfully submit that Clark describes further processing of the gas-oil residue by means of catalytic dewaxing, step (c) in all cases.

Applicants can find no disclosure or suggestion in Clark of a simultaneous production of middle distillates and lubricating bases. Applicants respectfully note that a lubricating base is known to one of ordinary skill in the art to have defined characteristics of viscosity and low temperature properties. In order to obtain these properties the hydrocarbon must be

highly isomerized as discussed previously. Applicants respectfully submit that the terms lubricating base and high boiling residue are not synonymous and the fact that Clark describes recycle of the high boiling residue to hydrocracking (Col. 1, line 35; Col. 6, line 56) or further processing by catalytic dewaxing, demonstrates that this material is not suitable for producing a lubricating base as in the claimed invention.

Furthermore, Applicants respectfully point out that Clark is specifically directed to the preparation of gas oil or gas oil blending component and nowhere discloses, suggests or provides motivation to one of ordinary skill in the art leading to simultaneous production of a high boiling residue suitable for producing a lubricating base.

The Office admits that Clark is deficient with respect to disclosing or suggesting the catalyst of the claimed invention. Chao is cited to show an active porous solid catalyst. The reference states that:

“The amorphous composites of this invention find application as hydrocarbon conversion catalysts either as is or after dispersion of catalytic metals thereon. Hydrocarbon conversion processes are well known in the art and include cracking, hydrocracking, isomerization, alkylation of both aromatics and isoparaffins, oligomerization, polymerization, reforming, hydrogenation, dehydrogenation, transalkylation, dealkylation, hydration, dehydration, hydrotreating, hydrodenitrogenation, hydrodesulfurization, methanation and syngas shift process.”

Table 3 of this reference shows results of experimental conversion of crude oil to fuel products (middle distillates) but is silent with respect to obtaining a high boiling residue suitable for producing a lubricating base.

Applicants respectfully submit that nowhere does this reference disclose, suggest or provide motivation to one of ordinary skill in the art which would lead to the claimed invention. Chao does not address or allude to the problem described above.

Applicants respectfully call the Examiner's attention to the following excerpt from the Office's own discussion of "**Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.***"

"The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.⁴³ "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."⁴⁴ **If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art,"** (Federal Register, Vol. 72, No. 195, page 57529) (**Bold added**)

In view of the foregoing, Applicants respectfully submit that the combination of Clark and Chao do not describe all the claimed elements and moreover no disclosure or suggestion is provided in either cited reference which would lead to a process for **simultaneously** preparing middle distillates and high boiling residues suitable for the production of lubricating bases from a linear paraffinic hydrocarbon feedstock obtained by a Fischer-Tropsch type synthesis.

Moreover, Applicants have shown in Table 5 of the specification that in addition to obtaining middle distillate, the process as claimed provides a yield of high boiling residue suitable for production of lubricating bases in yields of 87 to 100 % of the residue boiling above 360°C. In each case the material obtained has a high viscosity at 100°C. In contrast, the comparative example, using a catalyst not according to the claimed process has a much lower viscosity.

Accordingly, Applicants respectfully submit that in view of the above KSR guidelines a conclusion of obviousness cannot be supported and withdrawal of the rejection of Claims 1-22 and 25 under 35 U.S.C. 103(a) over Clark in view of Chao et al. is respectfully requested.

The rejection of Claims 23 and 24 under 35 U.S.C. 103(a) over Clark in view of Chao and Benazzi et al. (WO 02/48289 equivalent to U.S. 7,267, 758) is respectfully traversed.

The deficiencies of the combination of Clark and Chao have been discussed. Benazzi does not cure theses deficiencies and therefore this cited combination of references does not disclose or suggest the invention as claimed in Claims 24 and 25.

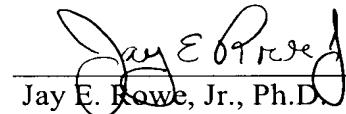
Benazzi describes a process for producing oils having an improved pour point and viscosity index from a hydrocarbon feed. The process comprises in succession **hydroisomerization and catalytic dewaxing**. Benazzi is cited to show hydroisomerization treatment of a light fraction.

Applicants respectfully note that Claims 23 and 24 indirectly depend from Claim 1 and therefore as Benazzi does not disclose or suggest a process for **simultaneously** preparing middle distillates and high boiling residues suitable for the production of lubricating bases from a linear paraffinic hydrocarbon feedstock obtained by a Fischer-Tropsch type synthesis, it does not cure the deficiency of the primary references. Accordingly, the combined references can neither anticipate nor render obvious the claimed invention. Applicants respectfully request withdrawal of the rejection of Claims 23 and 24 under 35 U.S.C. 103(a) over Clark in view of Chao and Benazzi.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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